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June 8, 2005

RECEIVED

Ms. Beth O'Donnell
Executive Director
Kentucky Public Service Commission
211 Sower Boulevard
Frankfort, Kentucky 40601

JUN 09 2005

PUBLIC SERVICE
COMMISSION

Re: Kentucky PSC Case No. 2005-00090

Dear Ms. O'Donnell:

Please find enclosed and accept for filing the original and a copy of the testimony of Karl V. Pfirmann, President, PJM Western Region, on behalf of PJM Interconnection.

Please do not hesitate to contact me if you have any questions or concerns.

Sincerely,

Kerry M. Stroup
Manager, Legislative and Regulatory Affairs
PJM Western Region

KENTUCKY PUBLIC SERVICE COMMISSION

An Assessment of Kentucky's Electric
Generation, Transmission and
Distribution Needs

Case #2005-000090

TESTIMONY OF KARL PFIRRMANN, PRESIDENT PJM WESTERN REGION PJM INTERCONNECTION, L.L.C.

PJM Interconnection, L.L.C. ("PJM") is pleased to participate in the Kentucky Public Service Commission's (Commission)'s Technical Conference by providing information which Kentucky policymakers may find valuable in their consideration of the development of a Strategic Energy Blueprint. PJM understands the policy objective to be the continued use and development of reliable electric energy in Kentucky, and the retention of Kentucky's competitive, low-cost electric advantage while protecting the environment. Today I will focus on PJM's regional transmission planning process, and its role in facilitating the use of Kentucky's abundant coal resources. Coupled with Kentucky's current retail utility regulatory paradigm, which provides state regulators with authority to keep low-priced electricity for the state's utility customers, PJM's regional transmission planning process will improve the reliability and economics of power flow in the region, and foster the development of new markets for Kentucky coal-fired generation. PJM is proud of what has been accomplished to date to open up new markets for coal. But no entity should just rest on its laurels. There is much more that we and others in this region can do collectively. It is for this reason that PJM has recently set out by way of example, a new initiative, which we have labeled "Project Mountaineer", to utilize our regional transmission planning process to explore ways to further develop an efficient transmission "super-highway" to bring low cost coal resources to market.

PJM serves as the Federal Energy Regulatory Commission (FERC)-approved Regional Transmission Organization ("RTO") in a thirteen state region which includes parts of eastern Kentucky, along with all or parts of West Virginia, Virginia, Tennessee, Ohio, Indiana, Illinois, North Carolina and Michigan as well as the mid-Atlantic states of New Jersey, Pennsylvania, Delaware, Maryland and the District of Columbia, a region of 45 million people. As the RTO, we serve as both the "air traffic controller" ensuring the reliability of the high voltage grid as well as the operator of a transparent wholesale market for electricity. Coal is a key resource in PJM, accounting for over 56% of the total electricity produced during 2004.

The Commission has asked that PJM and others identify the top issues facing the electric power industry in Kentucky over the next twenty years, and identify any barriers to meeting future investment needs in electric power infrastructure in Kentucky. From PJM's perspective, the major issue facing Kentucky's power

industry is the ongoing development of an efficient regional power grid. Such development is instrumental in providing the opportunity for both regulated and “merchant” investment in advanced coal generation technologies in the state to supply Kentucky’s energy needs, as well as the energy needs of the broader region. In effect, a robust and efficient regional power grid will stimulate the deployment of new generating facilities in Kentucky, as utilities and merchant generators see opportunities for recovery of investment either through traditional retail regulatory mechanisms, or through regional energy markets.

My basic message can be summarized as follows:

1. *The “R” in “RTO” Means Benefits for This Region*---One of the functions of an RTO is to engage in regional transmission planning. Since its inception as an independent entity, PJM has a proven transparent regional planning process that has already identified over \$1 billion in transmission improvements, all designed to improve the reliability and economics of power flows in this region. The recent expansion of PJM to include the AEP, Allegheny Power, Dayton, Dominion, Duquesne and Commonwealth Edison systems brings the proven benefits of PJM’s regional planning process to coal country;
2. *Inter-Regional Coordination is Ongoing at the Highest Level*--- PJM and MISO are working together to undertake regional planning for their combined 27 state footprint. We have joined together to pioneer an historic Joint Operating Agreement which calls for coordinated planning and cost allocation to end many of the stalemates of the past. The two entities recently signed a Memorandum of Understanding with TVA to further coordinate planning and operations activities and bring down many of the past barriers to interregional coordination.
3. *Much Has Been Accomplished: Significant Increased Power Flows*--As a result of the expansion of PJM, we have seen dramatic increases in the amount of power flowing from this region into “classic” PJM, including from coal-based generation, as illustrated on Exhibit A attached to my testimony. I should note that these power flows are a good news story for electric customers in this region. A utility’s lowest cost resources first go to serve its native load customers consistent with its state service requirements. These “off system” sales represent generation, over and above that needed to serve native load, available to serve other regional demands at lower cost. Off system sales are then eligible for consideration in each company’s retail ratemaking process consistent with individual state requirements;

4. *Taking Regional Planning to the Next Level: "Project Mountaineer"*— PJM recently proposed "Project Mountaineer" to demonstrate the possibilities that could result from a targeted cooperative effort to identify additional transmission that could be built in this region to facilitate fuel diversity and improve options for economic generation resources. At this early stage, Project Mountaineer should not be considered a proposal for any specific transmission line. Rather it reflects our commitment to utilizing our Regional Transmission Expansion Planning process involving the states, the FERC, the transmission owners in this region and affected stakeholders, to explore new transmission opportunities to improve reliability and to enhance access to markets for this region's valuable low-cost energy resources. Enhancing the transmission system in this manner will bolster economic development throughout the region, prompted by a resurgence in coal resource development and utilization. PJM is today announcing its intention to consult with each state regulatory commission in its footprint, as well as other stakeholders, to reach consensus on a process to move forward with Project Mountaineer.

The balance of my testimony will explore these matters in further detail.

I. MOVING BEYOND THE PAST: REGIONAL PLANNING THAT MEETS 21st CENTURY NEEDS

The Evolution of Regional Transmission Planning

1. The Origins of Transmission Planning---From the beginning of the electric industry, transmission was always considered as a component of major generation projects. As early as Thomas Edison's development of the Pearl Street substation in New York City, transmission was developed to link local generation to local load. Rarely, if ever, was transmission constructed as a stand alone asset not linked to development of a specific planned generation project. Individual utilities each undertook their own planning processes designed to meet their individual state service obligations and their own customer needs. In short, the basis of transmission planning was not to facilitate flows between regions but rather to deliver the output of a utility's own generation to its customers.

Of course, there are some notable early examples of regional planning approaches. PJM Interconnection was formed back in 1927 as a stand alone association of transmission companies in order to manage a shared backbone system designed originally to deliver power from a hydro-electric facility along the Susquehanna River to load centers throughout Pennsylvania, New Jersey and Maryland. Later, PJM transmission owners worked collaboratively to build the 500 kV transmission system to deliver jointly owned coal and nuclear generation to customer load. By the same token, AEP and Allegheny Energy sited generation in

strategic locations near the coal fields of the Ohio Valley and built robust multi-state transmission systems to deliver that generation to customers as far away as Fort Wayne, Indiana and Hagerstown, Maryland. There certainly was a degree of sharing and cooperation among utilities at that time. However, for the most part, transmission was designed to serve individual utility needs.

2. Ensuring Competitive Access to the Transmission Grid---The world of transmission planning changed dramatically with Congress' passage of the Energy Policy Act of 1992. Under that law, Congress embraced wholesale competition in electricity as the law of the land, creating a whole new class of exempt wholesale generators to compete in a competitive market. EPACT as well as subsequent Orders of FERC, including its landmark Orders 888 and 2000 opened the transmission grid to competitors allowing merchant generation to have the same rights to access the transmission grid as the utility's own generation. In short, transmission was treated like the interstate highway system, providing open non-discriminatory access to all users.

In moving to embrace wholesale competition the challenge remained to ensure that the system served the region reliably while still meeting local needs. PJM undertook to meet this challenge from its inception as an independent organization in the late 1990's. The states in the original PJM mid-Atlantic region insisted that PJM move forward with establishing a regional planning process prior to instituting competitive wholesale markets. That process has grown over time to become recognized as one which is robust and transparent. The PJM planning process takes a "big picture" look to ensure that there is sufficient transmission infrastructure to meet projected reliability needs and to relieve congestion in areas where market solutions do not arise. The states are involved in this planning process. To date, over \$1 billion of transmission investment has either been constructed or is under development as a result of PJM's planning process. An outline of that process and the "next steps" associated with its further development are outlined in the testimony of my colleague Audrey Zibelman which is attached to this testimony.

II. ENHANCING INTERREGIONAL POWER FLOWS: DEVELOPMENTS TO DATE

The Expanding PJM Footprint Has Increased West to East Power Flows

Although American Electric Power, Dayton, Dominion, Duquesne, and Commonwealth Edison have only been in PJM for less than one year (and in the case of Dominion, only since May 1 of this year), we have already seen a dramatic increase in west to east power flows. Specifically, as a result of these companies joining a Regional Transmission Organization, many of the constraints that served to adversely impact power flows have been internalized---redispatch of generation

in response to locational marginal pricing has been used to manage congestion on transmission lines rather than simply curtailing transactions.

Second, FERC has eliminated the “through and out” rates between AEP and Commonwealth Edison on one side and PJM on the other as well as between the Midwest ISO and PJM regions as a whole. These “through and out rates” served as a significant barrier to the economical flow of coal-based energy to eastern markets. They acted as artificial toll gates, adversely impacting the economics of coal based resources in this region compared to sources of generation which happened to be located on the other side of the “toll gate”.

Third, PJM’s Joint Operating Agreement with the Midwest ISO and the Joint Reliability Coordination Agreement among the Midwest ISO, PJM and TVA lay the groundwork for improved reliability across much of the Eastern Interconnection in real-time as well as the long term, through joint congestion management protocols as well as enhanced sharing of information and joint transmission system planning. These agreements and the development of a joint and common market between the very large PJM and MISO control areas will work to improve reliability, enhance regional trading and allow us to plan optimal transmission solutions irrespective of whether a particular company is a member of PJM or the Midwest ISO or within the TVA footprint. The same holds true from the perspective of the states: PJM’s transmission planning process, its voluntary markets, and its coordination protocols with MISO and TVA will work equally well for states in the region that have adopted full retail electric competition and states like Kentucky, where electric utilities remain vertically integrated but participate in a competitive wholesale electricity market.

Fourth, PJM’s Board of Managers in a letter to members dated May 31st, 2005, emphasized the need to integrate transmission planning (as well as demand side alternatives) with the capacity solutions PJM is currently evaluating to resolve systemic problems in PJM’s capacity market. The Board also directed PJM to extend the planning process horizon from five years to ten years, to review the economic planning process by working with members to identify appropriate changes to ensure adequate transmission investment, and to work in the FERC arena to remove barriers to transmission investment resulting from the absence of long-term financial transmission rights. The Board’s directives are a clear indication of PJM’s focus on transmission planning and on removing impediments to transmission investment which may result from PJM’s protocols and policies. The Board’s letter to members is attached to my testimony.

III. NEXT STEPS: “PROJECT MOUNTAINEER”

Today, increased sales of Kentucky coal-fired generation to PJM’s large market is constrained by transmission system capacity limitations across Appalachian Mountains. But there is a potential solution: an intensive stakeholder

effort to further strengthen the region's transmission backbone and provide support for harnessing this region's efficient low cost generation to meet our economy's growing demand for power. PJM has dubbed this initiative "Project Mountaineer". I wish to be very clear. The project is not to be seen as specific wires and towers at this point, but rather a targeted effort to consult with the state regulatory commissions and other stakeholders, and to use our regional planning tools to identify the region's need in a comprehensive manner across a very large footprint. The goal is to focus on all aspects of harnessing the existing and planned generation in this region to meet the needs of the state and the broader PJM market. And because the process will be undertaken by PJM in the context of its approved independent regional transmission planning process, we view this effort as one where facts and figures will prevail so as to limit claims that the data represents just the economic interests of a particular group of stakeholders.

1. Present Impediments to West/East Trade

Although west to east power flows have increased by approximately 35% since the integration of Allegheny, AEP, Commonwealth Edison, Dayton, and Duquesne into PJM, there remain certain physical constraints on the transmission system that have limited further flows of coal based generation to markets in the east. These constraints are depicted on Exhibit B and principally exist at three locations:

The Wylie Ridge transformers and Sammis-Wylie Ridge transmission line at the AEP/APS/FE interface;
The Bedington/ Black Oak 500 kV transmission line within the APS system;
and
The PJM Eastern Interface along the Delaware River, separating Pennsylvania and New Jersey.

2. Key Features of Project Mountaineer

In order to set forth by way of example potential resolutions of these constraints on west/east power flows, PJM has undertaken a preliminary delineation of the magnitude of the transmission improvements that are needed to enhance power flows by up to 5,000 MW. As Exhibit C indicates, to meet this targeted increase in power flows, two or more new backbone 500 kv and 765 kv transmission paths of approximately 550 to 900 miles in length will need to be constructed from Kentucky and West Virginia to eastern load centers stretching from Washington, D.C. to northern New Jersey.¹ Although there is some existing right of way associated with existing facilities which could be upgraded to handle

¹ While 765 kV lines are capable of transmitting approximately 50% more megawatts than are 500 kV lines, economic considerations regarding the integration of new lines with the existing transmission system infrastructure would establish how the respectively rated facilities should be deployed.

lines of this magnitude, a great deal of new right of way will be needed. PJM estimates the cost of this new transmission to range from approximately \$3.3 to \$3.9 billion. Although this is clearly a costly undertaking, it is worth noting that one study recently translated \$ 4 billion in new transmission investment to equate to only 0.1 cents/kwh on a typical residential bill if such costs were spread across the entire PJM footprint.²

3.. Project Mountaineer's Challenges

There remain considerable challenges to construction of transmission of this magnitude. I raise these challenges not to indicate that the initiative is not worth undertaking, but rather to ensure that we all have a realistic assessment of issues we will need to overcome as a region. The challenges which construction of this magnitude will face fall into a number of categories. I have outlined them below along with potential solutions for each:

a. Siting - High voltage transmission to move power from the coal fields of Ohio, Kentucky and West Virginia to markets along the eastern seaboard will require the siting approval of anywhere from three to six states. Consistent with individual state siting laws, each state will need to address and balance the need for the facility with its attendant environmental impact. For this siting process to be successful, it is critical that states work together, to look at not just individual state impacts but the benefits for the region as a whole in strengthening the interstate electric grid. As we all know too well, any one state can slow down the siting process. In order to ensure an orderly approach, we envision the PJM Regional Transmission Expansion Planning process as providing a forum where states can come together to work through issues associated with the need for these transmission facilities and help to craft multi-state solutions. Each state's sovereignty over the siting process would be respected but the critical information and a forum for development of regional solutions would be available for states within the PJM footprint.

b. Environmental Issues - We need to be especially proactive to address the land use challenges that may arise with construction of this magnitude. We may need to address difficult issues associated with traversing national forest land and other protected areas. We will need collectively to find routes that take into account the environmental sensitivities of this region. And we will need to be cognizant that any new transmission line of this magnitude will traverse difficult terrain---mountainous areas where there could be considerable construction challenges as well as more urban areas as we move closer into eastern PJM. In short, we need to go about this process wisely and with considerable planning and forethought, including consideration of advanced technology options to mitigate environmental siting impacts, where feasible and to the extent possible. For any such initiative to

² "PJM – The Need for Interstate Bulk Power Transmission System Expansion", George E. Owens, P.E., Downes Associates, Inc., presented on April 20, 2005 to the Maryland Public Service Commission.

be successful, public acceptance and ensuring minimal environmental disruption will be critical.

c. Cost Recovery - One of the first issues that policymakers should and do raise is “who pays?” In resolving this issue, we have the benefit of a body of existing precedent within PJM. Through our regional planning process and with FERC’s oversight, we have addressed the appropriate rules for allocating costs associated both with economic and reliability upgrades to the transmission system. By way of example, as an independent entity with expertise and a proven track record, PJM can identify the portion of these transmission facilities which are attributable to enhancing overall regional reliability (and whose costs would therefore be spread among all customers in the affected areas) vs. those portions of the line which are needed for economics for which identified beneficiaries would shoulder the cost burden, or can be attributed to the interconnection requirements of specific generating facilities. Although these decisions are by definition judgmental, the existence of a proven body of precedent, PJM’s independence and transparency and FERC oversight all provide appropriate checks and balances. Given the magnitude of any such line, we envision that the stakeholder process envisioned under Project Mountaineer would consider the results of applying these cost allocation principles and also work with the states in this region to explore other alternatives to lower the financing costs associated with the construction of these facilities.

d. Coordination Among Transmission Owners - At the beginning of this testimony, I noted that, prior to RTOs, planning was characterized by individual utility efforts with more limited regional coordination. The existence of an independent entity such as an RTO changes that dynamic and opens up new opportunities for cooperative approaches to ownership of transmission. PJM is presently proposing a consortium approach among transmission owners to address issues associated with aging infrastructure. Through the consortium approach, individual entities come together to utilize their collective buying power and needs to ensure adequate infrastructure across the entire region. There is no reason a similar consortium approach could not be explored under the umbrella of Project Mountaineer. For example, public power entities have expressed interest in ownership of transmission facilities. States in the West are considering state financing of transmission. There are a variety of creative ownership mechanisms that could be explored to avoid a few entities having to take all of the risk and bear all of the cost associated with this massive construction project. The PJM planning process would provide a forum for exploring these consortium approaches.

D. Project Mountaineer: Next Steps

The hallmark of PJM has been its use of open stakeholder processes to address issues which defy individual solutions. Through this process, we have identified over 200 changes to PJM’s Operating Agreement, almost all but a handful of which have been made through a collaborative process that have resulted in

endorsement by our members. We believe that the PJM stakeholder process, as well as dialogue with the newly formed Organization of PJM States and its individual member states, would provide excellent vehicles for further exploration and development of this project. Our collective efforts should not end there. We pledge to work with each of the state economic development entities, the coal industry as well as the utilities who have committed to significant new investment in coal based generation for this region.

Over the next six to eight months, PJM will meet individually with each state regulatory commission in its footprint, as well as with other interested stakeholders, to develop consensus around a process to move forward with Project Mountaineer. We stand ready to take our regional planning efforts to the next level----working with the states in the PJM region, the Midwest ISO, our stakeholders and in particular this Commission to roll up our sleeves and focus on ensuring adequate transmission infrastructure to serve as a vital link for this region's clean coal generation to serve this country's needs well into the 21st century. We ask you to join us in our efforts.

Exhibit A

Average Import into MAAC Region
From ECAR Region

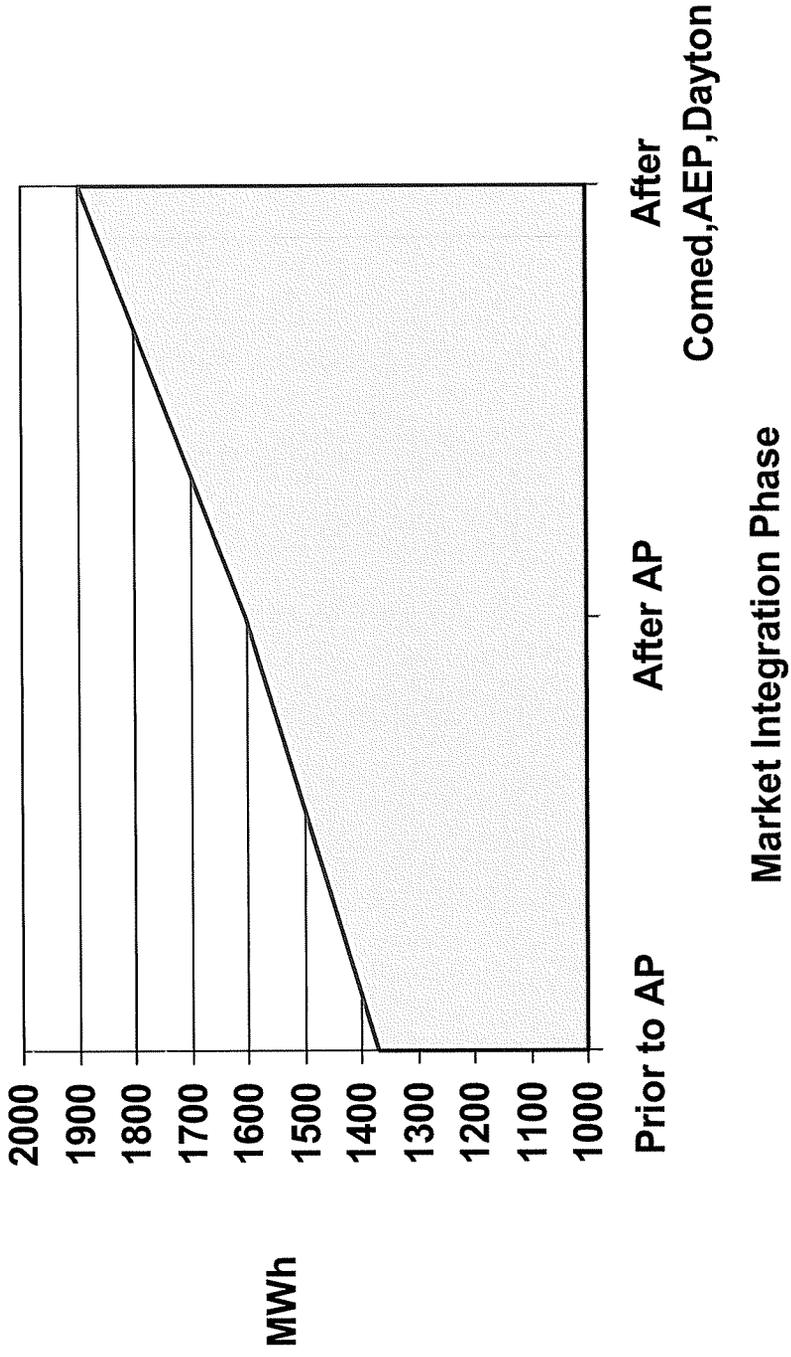


Exhibit B

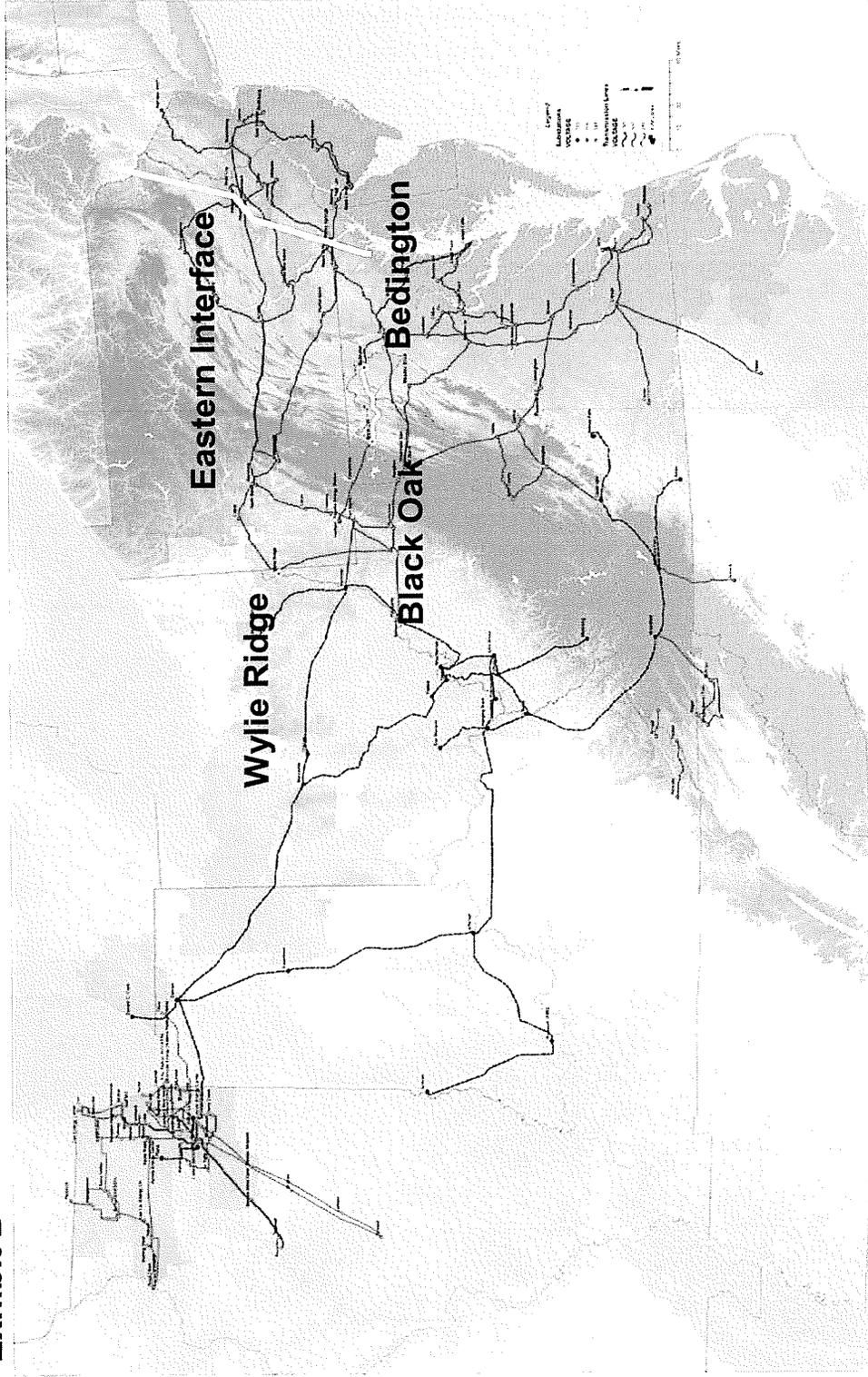
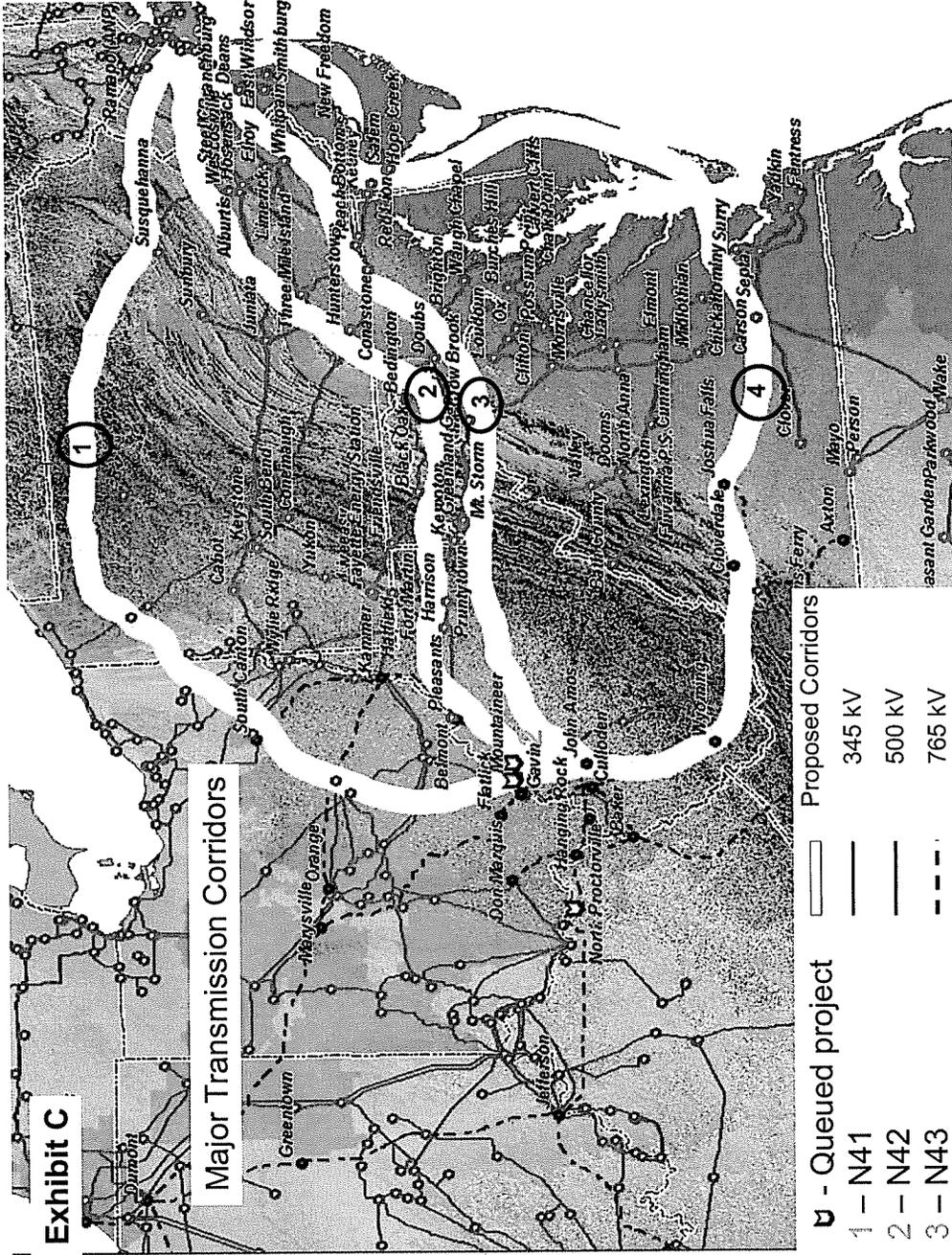


Exhibit C

Major Transmission Corridors





Craig A. Glazer

Vice President - Governmental Policy
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April 21, 2005

The Honorable Magalie R. Salas, Secretary
Federal Energy Regulatory Commission
888 First Street, N.E.
Washington, D.C. 20426

Re: FERC Docket Nos. AD05-5-000, PL03-1-000

Dear Ms. Salas:

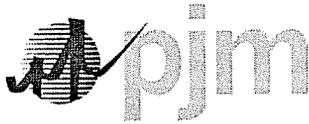
Enclosed is the testimony of Audrey Zibelman, Executive Vice President of PJM Interconnection, L.L.C. for the Technical Conference to be held on April 22, 2005.

Please call me at 202-423-4743 with any questions concerning this filing.

Sincerely,

Craig Glazer

**Vice President,
Federal Government Policy
PJM Interconnection, L.L.C.**



UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Transmission Independence and Investment

Docket No. AD05-5-000

Pricing Policy for Efficient Operation and
Expansion of the Transmission Grid

Docket No. PL03-1-000

EXECUTIVE SUMMARY OF TESTIMONY OF AUDREY ZIBELMAN,
EXECUTIVE VICE PRESIDENT,
PJM INTERCONNECTION, L.L.C.

In her remarks to the Federal Energy Regulatory Commission, Ms. Zibelman sets forth the “key ingredients” that are essential to creating a viable platform for enhanced transmission investment. She calls upon the industry and the FERC to avoid the pitfalls of yet another structure debate, but instead to use 21st century technologies and business acumen to rethink and retool how to enhance the grid.

Ms. Zibelman relays some of the key experiences from PJM’s history which have worked to create an appropriate platform for transmission investment. By putting these elements in place, this Commission can obtain the benefits of consolidation of operations and the needed focus on transmission without the attendant difficulties associated with divestiture. These “building blocks” of a strong platform for investment include:

- A regional planning process* which provides transparent information to the marketplace;
- Settled and predictable business rules* including rules addressing participant funding;
- Healthy competition* between transmission, demand side and generation solutions to achieve optimal results for customers; and
- Enhanced regional coordination* both among RTOs and other entities.

On this latter point, she notes that just before the start of today’s Technical Conference, PJM formally entered into an historic Joint Reliability Coordination Agreement with TVA and the Midwest ISO. This agreement provides for an unprecedented level of reliability coordination and planning across a footprint

that includes over 306,000 MW of generation serving more than 68 million customers/end users in all or parts of 25 states in the combined PJM/MISO/TVA region. The agreement builds on the Midwest ISO/PJM Joint Operating Agreement which has become a model for seams coordination among large transmission operators.

Ms. Zibelman also details additional action needed within the PJM footprint to enhance transmission investment. She sets forth five initiatives for the future:

Transforming the Economic Planning Process—As we examine reforms to the economic planning process, the Commission and the industry first needs to settle on the appropriate transmission model, be it a “minimal” system supporting generation sited close to load or a “strong” system designed to improve the competitiveness of the wholesale market;

Providing a long term financial transmission right product---Both transmission developers and load need greater certainty concerning the long term value of transmission upgrades and predictability of the costs of their supply arrangements. PJM is committed to developing such a product;

Transmission Pricing Reform---The Commission should move beyond rate of return adders and take a fresh look at the pricing of transmission. Ms. Zibelman outlines a number of options ranging from performance-based approaches to competitive auctions where incremental transmission is priced in comparison to substitutable generation and demand solutions;

Innovative Business Models for Transmission---The industry needs to develop new business models rather than focus on the structure debates of the past. She posits as a model, building on PJM’s aging infrastructure consortium so as to manage transmission assets under a single business model while still respecting individual ownership rights;

Harnessing Advanced Technologies---In order to deploy advanced technology, the industry needs to consider utilizing a regional rather than company by company approach to model the costs and benefits of advanced technology deployment.

A complete text of Ms. Zibelman’s remarks has been filed with the Commission in this docket and is also available on PJM’s website www.pjm.com.

UNITED STATES OF AMERICA
FEDERAL ENERGY REGULATORY COMMISSION

Transmission Independence and Investment

Docket No. AD05-5-000

Pricing Policy for Efficient Operation and
Expansion of the Transmission Grid

Docket No. PL03-1-000

REMARKS OF AUDREY ZIBELMAN, EXECUTIVE VICE PRESIDENT
PJM INTERCONNECTION, L.L.C.

“Those who cannot remember the past
are condemned to repeat it.”

George Santayana

The Life of Reason, 1905

PJM Interconnection L.L.C. (“PJM”) is pleased to participate in this very timely Technical Conference addressing potential solutions to ensuring appropriate investment in electric transmission infrastructure. At PJM, we have been focusing on transmission investment since before the start of our markets in the late 1990’s. I hope today to outline for you some of the essential “building blocks” we have put in place to create the platform for transmission enhancement and report on how they have worked. I also wish as well to candidly discuss with you what challenges we, as well as the rest of the industry face, detail what needs further work and provide you with our thoughts on future initiatives that need to be undertaken both by PJM as well as this Commission. Like the above quote, it is important that all of us base our decisions on facts, not emotion, on real experience not anecdotes and that we commit to an honest and open dialogue on what has worked and what needs further development as we work to help formulate policy direction for the future.

At the outset, we need to resolve a threshold issue. This Commission has appropriately placed all issues, including industry structure issues, on the table. Although one could posit, at least in theory, that consolidated ownership and operation of the grid may provide for an optimal model focused solely on transmission, we need not tie ourselves up on the many difficult issues raised by divestiture. For one, unless the Commission were to somehow order divestiture of the industry all at once so as to create a consolidated entity whose footprint parallels the existing interconnections, the benefits of consolidation and divestiture may elude us for some time. Through fully functioning RTOs, this Commission can obtain the benefits of consolidation of operations and the needed focus on transmission through a more expeditious and less perilous path than divestiture. That being said, RTO development of the future needs to occur not as a result of some regulatory mandate, but because RTOs provide the best *business* environment for the industry and the investment community to develop a robust transmission grid that meets customer needs. This testimony will discuss the needed “building blocks” i.e. what

has worked and what needs to happen to further enhance the development of the grid, at least in the 2/3rds of the country presently under RTOs.

WHAT HAS WORKED: ESSENTIAL BUILDING BLOCKS TO INCENT NEW TRANSMISSION INVESTMENT

Let me start by providing an overview of those key structural “building blocks” which are in place in PJM to incent needed transmission investment. I wish to start with this outline since we believe these building blocks are essential in any region of the country, whether or not it wishes to move to organized competitive wholesale markets. Without this necessary infrastructure in place, efforts to develop a robust regional transmission grid will have difficulty getting out of the starting gate.

Building Block #1---Providing information transparently to the marketplace through an independent regional transmission planning process

As with any prudent investment, potential investors in transmission need to obtain information to ensure that their investment will meet the customers’ needs and provide value-added that justifies its up front cost. PJM’s regional transmission planning process provides that critical information enabling investors as well as customers to obtain real time unbiased information concerning the state of the grid and the areas of congestion needing relief. The true credit here goes to the mid-Atlantic state commissions in the PJM region---each of which insisted that PJM establish a transparent independent planning process before moving to competitive wholesale markets. As a result of the process being undertaken by an independent entity through an open stakeholder process, customers and investors can obtain confidence in the accuracy of the data. Moreover, they can see how a given project fits within the larger regional grid and the degree to which it enhances the marketplace.

The planning process has worked to identify and require construction of needed facilities to enhance the reliability of the grid. Specifically, PJM has seen:

- \$1.04 billion in new transmission investment identified through the PJM Regional Transmission Expansion Planning Process (RTEPP);
- \$400 million of new transmission already constructed;
- \$150 million of new transmission presently under construction;
- \$470 million of new transmission presently under study through the RTEPP process;
- Approximately \$220 million in congestion eliminated through reliability upgrades;
- Approximately \$20 million in congestion eliminated through economic upgrades;

- Approximately 60% (\$575 million) of these investments relate to reliability or economic upgrades while 40% (\$467 million) relate to generator interconnection.

Building Block #2---Settled and Predictable Business Rules

We hear often from potential investors in both generation and transmission that certainty will drive investment---certainty around the process for interconnection, certainty around business rules and certainty around revenue. The PJM generation interconnection process is a good example---it is a mature process that provides certainty both in the process and in the business rules. Investors can point to settled rules with settled milestones and a track record of consistent outcomes. Since 1999, we have processed 533 generator interconnection requests. Moreover, we provide a settled and predictable process to identify the appropriate allocation of costs. Specifically, the PJM RTEPP resolves contentious “participant funding” issues up front rather than leaving them for separate litigation after the completion of the planning process. The PJM RTEPP utilizes a “but for” test to identify the true “cost causer” associated with a given investment. The process identifies whether the particular upgrade would have been needed *but for* the actions of a particular entity or set of entities. For example, if a generator interconnection to the grid causes a reliability problem (identified as a violation of NERC criteria), the generator is identified under the “but for” analysis and knows up front the cost of the upgrade needed to effectuate its interconnection. On the other hand, if the reliability violation results from load growth or other system conditions, the particular transmission zone is identified for such costs to be assigned.

By the same token, our process for reliability upgrades is a mature process and provides certainty. The process for identifying the baseline is transparent, the application of NERC and the appropriate Regional Reliability Council criteria is clear and the stakeholder process ensures that everyone can participate and provide needed input. The states, which have the ultimate siting authority, participate in the process up front and can rely on the public record developed for the identification of need. In short, a transparent and independent planning process can, if allowed to develop and mature, provide certainty to the investment community by resolving contentious participant funding issues and ensuring that reliability upgrades are identified through a transparent and predictable rather than “black box” process.

Building Block #3---Ensuring Proper Competition Between Transmission, Demand Side and Generation Solutions to Achieve Optimal Results for Customers

In order for regional planning to drive efficient outcomes, it is generally agreed that the process must allow for consideration of generation and demand side solutions in addition to transmission solutions. The challenge becomes how to incent healthy competition between these alternative investments while still recognizing the realities of vertical integration and the need to respect integrated

resource planning processes in bundled states. In the case of reliability solutions, the RTO directs the reliability upgrade while, at the same time, providing the information to the marketplace five years out to address the solution through these alternate means. In the case of economics *i.e.* building needed infrastructure to reduce congestion, the RTEPP provides a one year “market window” to allow for the marketplace to arrive at solutions before one defaults to the regulated transmission solution. And under our proposed Reliability Pricing Model, we are building in the opportunity for transmission to effectively compete against traditional capacity resources to ensure long term reliability. Although the response from the marketplace to our economic planning initiative has been less than robust for reasons I will explain later, we believe a structure which allows for generation, transmission and demand side to compete with one another to achieve optimal customer benefits is an essential structural building block.

Building Block #4---Enhanced Regional Coordination

Given the highly interconnected nature of the Eastern Interconnection, regional coordination needs to move beyond individual utility control areas and even RTO boundaries. The Joint Operating Agreement with the Midwest ISO commits both entities to exchange data and information, coordinate analysis of interconnection and transmission service requests, and develop a coordinated plan. Each of these actions is currently underway.

Moreover, today’s announcement of a TVA/PJM/MISO Joint Reliability Coordination Agreement will take regional coordination to the next level---allowing for an unprecedented level of data sharing and coordination among these three very large entities which together comprise over 306,000 MW of generation serving more than 68 million customers/end users in 25 states as well as the Canadian province of Manitoba and the District of Columbia. These three transmission operators agreed today to prepare a triennial Coordinated Regional Transmission Planning study, to coordinate their analysis of long term firm transmission service requests, to coordinate their analysis of interconnection requests and to exchange critical data including load flow cases and planning models on an ongoing basis. For the first time, investors, loads and transmission owners will be part of a coordinated approach to planning of the grid across more than 2/3rds of the Eastern Interconnection. This information, available transparently, will allow investors to see how their potential investment fits within the larger picture so as to ensure that it truly will add value to the overall Eastern Interconnection.

GOING THE NEXT STEP: A ROADMAP FOR THE FUTURE

None of us should rest on our laurels. Despite these baseline accomplishments, we believe more needs to be done in PJM and elsewhere to provide the right atmosphere for the needed enhancement of the grid. As a result, I would like to outline for you issues that we have not satisfactorily resolved in PJM and provide you with our thinking to date on some action items and tasks for the future.

Challenge #1: Transforming the Economic Planning Process

Back in 2002, this Commission directed us to amend our planning process to address not just transmission enhancements needed for reliability but also those to support the development of a competitive wholesale market. The good news is that the economic planning process has been very successful from the perspective of providing useful information regarding transmission congestion. Our ability to evaluate congestion and develop solutions as a result of the process has improved dramatically. And the interrelationship between reliability upgrades and their effect on improving economics has now become a part of our RTEPP.

On the other hand, our economic planning process has not been successful to date with respect to stimulating independent development of transmission projects. Only five transmission projects have been submitted into the interconnection queue as a direct result of the economic planning process and each represents minimal facility upgrades. In short, while the economic planning process is sending out useful information to developers, the revenue streams and the related level of certainty available through the interconnection process do not appear, at least so far, to be sufficient to promote the development of independent transmission projects. No significant projects have been proposed through the process to date. Although we, along with the stakeholders and this Commission, toiled long and hard on tackling the many issues associated with an economic planning protocol, including issues such as the appropriate role of ITCs, when it is appropriate to defer to the market and at what point the RTO must step in, I am disappointed to report that our model in this area, has, to date, produced disappointing results.

To begin to resolve this issue, I believe we need to step back and ask some fundamental threshold questions. Do we want a “minimalist” transmission grid that essentially serves as an “add-on” facilitating the reliable movement of power from generation sited close to load? In other words, should the transmission system merely be a facilitator for a model based on local generation? Or are we looking for a strong transmission system that, by its design, links distant generation to load in order to address both economics and reliability and accommodate an array of generation alternatives from which load can choose? The “rules of the road” and the costs to build one system versus another are vastly different. However, we need to first define our expectation before we can develop the policy structure we need to meet that alternative.

In many ways, the Energy Policy Act of 1992 answered this question in favor of the strong superhighway to support a competitive generation industry. However, we find ourselves slipping back from time to time as we wrestle with difficult issues such as state vs. federal jurisdiction, “native load” protection and the cost to build this infrastructure. Assuming that we wish a strong transmission system to provide load with many options, we believe a new set of “building blocks” is needed.

Challenge #2: Providing a long term financial transmission right product

Load serving entities have argued that the uncertainties associated with congestion costs have discouraged needed investment. Although one can debate the fine points of whether congestion costs and LMP signals are working to provide the needed investment, it is also clear that a long term FTR product is needed to recognize the value of one's transmission investment if one is a developer of transmission and to provide more certainty to load serving entities as they weigh their purchase power options. We at PJM are committed to developing such a product and look forward to working with this Commission on the details of that product.

Challenge #3: Pricing Reform

To date, the Commission has sought to incentivize transmission investment by offering higher rates of return under the traditional cost of service model. Though the industry has generally supported this approach, it has not solved the problem of insufficient transmission investment. Perhaps it is time to move away from this incremental approach and take a new fresh look at how we price transmission. There are a range of options we can consider here. A number of countries have adopted performance based approaches where transmission owners can realize the gains associated with various improvements such as the reduction of losses or reduction in congestion. These approaches have considerable merit and can allow management to focus on meeting clearly defined public policy goals.

We can also consider going a step further and actually move away from cost based pricing altogether. We often argue that transmission solutions compete with generation and demand side solutions. However, at the end of the day we apply vastly different pricing regimes to these competing solutions which inevitably skew that competition. Perhaps in areas where there are truly substitutable resources, we should utilize a form of value of service pricing---allowing transmission to be priced at its value when compared against substitutable demand side or generation solutions. A "value of service" approach would need appropriate checks and balances and probably best works for incremental investment arising from a transparent planning process. We would need to be assured that there is a true level competitive playing field to identify and cap the asset's value so as to avoid the charging of monopoly rents. Along these lines, our Reliability Pricing Model will allow transmission to bid in as a capacity resource effectively allowing it to compete against generation and demand side. Through an organized capacity process such as RPM with a long term forward-looking approach, one can feel confident that the "price" of transmission has been set competitively and is priced in a manner which recognizes its true value to its customers. In short, we cannot, on one hand, champion the need for transmission to compete with generation and demand side alternatives but then refuse to price it in a competitive manner when those situations arise.

Challenge #4 Developing Innovative Business Models for Transmission

The Commission has spent many hours trying to create the right regulatory model for Independent Transmission Companies (ITCs). However, at the end of the day it is not regulatory action but a viable business model that will ensure the development of ITCs. To date, that business model has somewhat eluded us, partially because of the vertically integrated structure of our utilities, partially because of the mix of federal and state regulation, each with their own unique definitions of the service obligation, and partially because of the financial circumstances the industry has faced in recent times.

A few years ago, this Commission engaged in an extensive separation of functions (known as the “slicing and dicing” order). Unfortunately, we may have placed the cart before the horse. It is time to develop the viable business model and then, just as form follows function, adapt our industry structures to accommodate that business model. The potential repeal of PUHCA as well as the tax advantages passed by Congress provide some of the tools that could drive a change to industry structure.

Now is the time to reexamine the business model. While reexamination should build on the lessons learned from the TRANSLink proposal, the ITC and ATC experience in the Midwest and other attempts to form the business case for a stand alone transmission company, we should not stop at the experience of the electric industry. If our goals are as they should be, ensuring that we are building a strong regional grid and optimizing transmission investment, we should be prepared to look at alternative business models that will allow us to achieve that benefit without compelling divestiture of existing investment and/or consolidation of new transmission investment into a single entity.

For example, other industries, such as the aerospace industry, have successfully used consortiums to develop complex projects that have involved multiple governmental and industry players. The technology industry has also recognized that partnering rather than competing on investment is often the soundest path to success.

Presently, PJM is exploring a consortium-like model with our transmission owners to address issues associated with aging infrastructure by use of a different paradigm. We are approaching a replacement plan for aging transformers as if they were owned and operated by a single company. We are looking to apply a single set of criteria for determining which transformers need to be replaced across the whole market rather than continuing to have each transmission owner address the issue only as to their system. By applying this approach, we can prioritize transformer replacement based on their overall system impacts rather than simply by its impact within a single zone. In addition, we are looking at adopting a standard design for replacement transformers across the whole PJM market. Standardized transformers should result in cost savings due to combined buying power and economies of scale and provide for more interchangeability in the event of system

failures. We are pursuing this consortium approach to achieve the benefits of common transmission ownership and operation without having to require current owners to divest or otherwise restructure their current asset ownership. We view this step as creating a “virtual ITC” for infrastructure issues while still respecting individual asset ownership.

This same approach can be considered for new transmission infrastructure. Asset management can take place under a single business model while still respecting individual ownership interests and providing opportunities for new investors into the grid. Under this approach, owners could standardize transmission line components and eventually achieve a level of interchangeability of supplies in the event of failures or catastrophic events. Applying this process proactively will result in components being replaced before they fail, harnessing the economies of regional scale and eliminating internal “seams” associated with asset management. We believe that our aging infrastructure initiative could provide a sound starting point for further development of this concept.

Challenge #5—Taking Advantage of Advanced Technologies

Despite valiant efforts by this Commission, the electric industry is still suffering from a lack of focus on how new technologies can enhance reliability and efficient grid operations. In addition to supplying the right incentives for new investment, we must also ensure ourselves that we are providing incentives for the right type of investment. Elsewhere in the world, companies are increasingly using advanced technologies to place better information from the field into the hands of the system operator. For example, the installation of automated substations can help reduce costs, increase reliability and system security. However, today North American investment in automated substations lags far behind the rest of the world. In addition to the investment recovery concerns addressed previously, the fractionalized ownership of the grid may be contributing to this failure since the cost/benefit analysis of these new technologies are much easier if once considers regional as opposed to local benefits.

Within the RTO, we have an opportunity to use advanced technologies to help ensure optimal operation of the grid at the lowest investment cost to the consumer. The challenge and opportunity before us is to expand on the work we are doing with aging infrastructure and fair pricing for new investment to help encourage and ensure that we are maximizing the value of advanced control and other system technologies.

In closing, as with all industries, 21st century technologies and business acumen afford us the opportunity to rethink and retool how we will evolve the grid. We have an unparalleled opportunity to use price transparency, technology, information and, a new openness to rethink business, to optimize system investment and operation. I have shared with you some of our experiences and outlined our challenges going forward. We reiterate our pledge to work with everyone in this

room and in the industry to move beyond the rhetoric of the past and truly tackle these difficult issues of ensuring a 21st century approach to constructing the transmission grid of the future.



Audrey Zibelman
executive vice president

Audrey Zibelman, executive vice president of PJM Interconnection, oversees operations, planning, markets and internal supporting functions.

Ms. Zibelman came to PJM from TRANSLink, LLC where she was chief executive officer. TRANSLink was an independent transmission company organized to have operational control of transmission assets of 13 public and investor-owned utilities operating in 14 states.

Previous to TRANSLink, Zibelman held senior management positions at Xcel Energy Corporation. She began at Xcel as a senior attorney and then was named president of NSP Energy Marketing and Fuel Resources. She was vice president of integration management and then vice president of transmission before moving to TRANSLink. Ms. Zibelman has held the post of general counsel to the New Hampshire Public Utilities Commission and special assistant attorney general in Minnesota.

She earned her law degree from Hamline University Law School. She earned her BA from Pennsylvania State University.

Ms. Zibelman was a volunteer teacher with the Peace Corps after graduating from college. She also has served as chair of the Minnesota Urban Coalition.

PJM Interconnection ensures the reliability of the high-voltage electric power system serving 45.3 million people in all or parts of Delaware, Indiana, Illinois, Kentucky, Maryland, Michigan, New Jersey, Ohio, Pennsylvania, Tennessee, Virginia, West Virginia and the District of Columbia. PJM coordinates and directs the operation of the region's transmission grid; administers a competitive wholesale electricity market, the world's largest; and plans regional transmission expansion improvements to maintain grid reliability and relieve congestion. Visit PJM at www.pjm.com.

May 31, 2005

Dear PJM Members and Interested Stakeholders,

The PJM Board of Managers extends its sincere appreciation to all Members and Interested Stakeholders for their valuable input and dialogue on the Reliability Pricing Model (RPM) and on proposed enhancements to the Stakeholder processes, as well as the other matters addressed at the Annual Meeting. The Board is now in the process of evaluating how best to proceed with the current RPM proposal. In this letter, we update the Members on the Board's current thinking with respect to RPM and the Stakeholder processes.

As you may be aware, FERC has convened a technical conference on RPM on June 16, 2005. In light of significant difference of opinion on many aspects of RPM, the Board understands and welcomes FERC's interest in supporting PJM and its Members' efforts to reach a satisfactory resolution of this challenging topic. Thus, as a preliminary matter, the Board has elected to defer a decision on the RPM proposal until it has had a chance to consider the record which will develop during the FERC Technical Conference.

The Board also notes that the RPM proposal focused principally on establishing a longer-term generation commitment to facilitate the attraction and retention of generating capacity required for system reliability. The comments that we have received over the last year and particularly during the Annual Meeting crystallized the important perspective that an adequate capacity market cannot be developed in a vacuum. Rather, capacity solutions must be integrated with transmission planning and the development of robust demand side alternatives. For these reasons, and independent of the direction PJM ultimately may take with regard to RPM, the Board is directing PJM to undertake the following initiatives:

1. **Long term transmission planning** – The Regional Transmission Expansion Process (RTEP) currently uses a five-year planning horizon. It has become apparent that the level and nature of transmission investment required for the region requires a longer time period. The Board is directing PJM to work with the Membership to develop protocols for establishing a ten-year planning process by year end.
2. **Economic Planning** – The Board is concerned that PJM's current methodology for economic planning may not be achieving the desired outcome of ensuring adequate transmission investment to support robust competitive markets. The Board is directing PJM to review its current economic planning process and work with the Members to identify appropriate changes. To the extent feasible, PJM will undertake this analysis in conjunction with the development of the longer term planning process.
3. **Long-term FTRs** – The Board understood the concern of a number of Stakeholders that the absence of long-term FTRs is impeding transmission investment and the development of long-term bilateral capacity contracts. The Board understands that FERC has commenced a proceeding on this topic. The Board is appreciative of this initiative and will encourage timely completion of PJM's efforts in this regard.

4. **Demand Response** – PJM currently has several initiatives, including RPM, to integrate demand response programs into its markets and to expand the usage of demand response in the wholesale market. The expectation is that these initiatives will be filed with FERC by year-end. PJM is also working with its States to identify and resolve regulatory and other impediments to maximum participation of load in the markets. In this regard, the Board applauds the efforts of the States and the Membership and encourages their timely completion.

5. **Near-term generation and transmission adequacy and reliability requirements** – The RPM analysis revealed significant reliability concerns in Northern New Jersey beginning in 2008. Regardless of how RPM proceeds, the Board is convinced that these issues must be resolved expeditiously. The RTEP processes have already identified the near-term transmission requirements for these regions. The Board also understands that PJM and the transmission owners are taking the necessary steps to invest in and secure the reliability of the local grid. The Board will continue to monitor these efforts. In addition, the Board is directing PJM to work with the State of New Jersey and affected generation owners and load representatives to ensure that the appropriate contracts are in place to retain adequate generation in the region as well as to explore avenues to optimize the availability of demand response.

Finally, the Board is encouraged by the Members' response to the PJM Whitepaper which suggested modifications to the current Stakeholder process. The Board is pleased with the formation of a working group to address this topic and looks forward to the results produced by the group.

In closing, the Board appreciates the members' dedication to improving the PJM markets. As the PJM markets mature and the Membership increases, there will remain many opportunities to find and implement market design changes that will enhance the ability of the markets to meet electric customer needs. In almost every instance, there will be differences of opinion and new approaches to resolve the identified problems. As in the case of RPM, the Board believes that debate among the Members will improve the quality of the final product and identify other opportunities to improve reliability and market participation. The Board will continue to consider the RPM proposal and will inform the Members of its decision at the earliest possible opportunity, taking into account in its deliberations the record of the Commission's technical conference.

Sincerely yours,

Phillip G. Harris on behalf of the PJM Board

PGH/AAZ/cf/gks